

- 1) INTRODUCTION TO MEDICAL MICROBIOLOGY (One hour)**
  - i) Historical introduction to microbiology
  - ii) Contributions of
    - (a) Louis Pasteur
    - (b) Robert Koch
  - iii) Classification of microorganisms
  - iv) Branches of microbiology and their significance
  
- 2) BACTERIAL ANATOMY AND CLASSIFICATION (Two hours)**
  - i) Bacterial cell structure, organelles and their functions
  - ii) Bacterial envelope of gram positive and gram negative bacteria
  - iii) Cytoplasm
    - (a) Ribosomes
    - (b) Mesosomes
    - (c) Nucleoid
    - (d) Inclusion granules
  - iv) Flagella, Pili and Capsule
  - v) Plasmid, Spores and their significance
  - vi) Classification of bacteria based on morphology and nutrition
  
- 3) GROWTH, CULTIVATION AND IDENTIFICATION OF BACTERIA (Two hours)**
  - i) Bacterial growth and growth curve
  - ii) Cultivation of bacteria
    - (1) Culture media
    - (2) Culture methods
  - iii) Identification of bacteria
    - (1) Brief introduction to various methods of;
      - (a) Microscopy and Staining techniques
      - (b) Biochemical reactions
      - (c) Serology
      - (d) Molecular techniques
  
- 4) ANTIMICROBIAL SUSCEPTIBILITY (One hour)**

Disc diffusion methods – Kirby Bauer's and E - test
  
- 5) INTRODUCTION TO VIROLOGY, MYCOLOGY & PARASITOLOGY (Three hours)**
  - i) General features of viruses
  - ii) Virion structure
  - iii) Classification of viruses
  - iv) Diagnosis of viral diseases
  - v) General properties and classification of fungi (morphological classification)
  - vi) Infections produced by fungi and their diagnosis
  - vii) General properties and classification of parasites
  - viii) Parasitic infections and their diagnosis
  
- 6) STERILIZATION AND DISINFECTION (Three hours)**
  - i) Classification of sterilization methods
  - ii) Physical: Heat
  - iii) Sterilization by heat
  - iv) Dry heat sterilization – Hot air oven and incinerator
  - v) Moist heat sterilization
  - vi) Methods that employ moist heat
    - (a) Below 100 °C, at 100 °C and above 100 °C
  - vii) Classification of disinfectants used in hospital and their mechanism of action
  
- 7) INFECTION & IMMUNITY (Two hours)**
  - i) Infection
    - (1) List the types, sources, routes and spread of infectious diseases
  - ii) Immunity
    - (1) Classification and mechanism
    - (2) Immunization
      - a. Types of vaccines
      - b. Immunization schedule in India

**8) ANTIGEN & ANTIBODY (One hour)**

- i) Definition
- ii) Classification of antibodies
- iii) Functions of antibodies
- iv) Diagnostic importance of antigen-antibody reactions
  - (1) Agglutination
  - (2) Immunofluorescence
  - (3) ELISA

**9) IMMUNE RESPONSE (Two hours)**

- i) Cells of immune system
- ii) Humoral Immunity
  - (1) Primary and secondary immune response
- iii) Cell mediated Immunity
  - (1) Constituents of cell mediated immunity
  - (2) Significance of cell mediated immunity

**10) HYPERSENSITIVITY (Two hours)**

- i) Classification
- ii) Immediate hypersensitivity
  - (a) Anaphylaxis and atopy
  - (b) Mechanisms and mediators
- iii) Cytotoxic hypersensitivity-Mechanism and associated disorders
- iv) Immune complex hypersensitivity-
  - (a) Arthus reaction, serum sickness and immune complex diseases
- v) Delayed type hypersensitivity-
  - (a) Contact dermatitis and tuberculin type hypersensitivity
  - (b) Mechanism and clinical aspects

**11) AUTOIMMUNITY (One hour)**

- i) Autoimmunity
  - (1) Mechanisms of autoimmunity
  - (2) List the diseases involving predominantly one type of cell or organs
  - (3) List the diseases involving multiple organs (systemic)

**12) NOSOCOMIAL INFECTIONS (One hour)**

- i) Common hospital acquired infections
- ii) Causes of hospital acquired infections
- iii) Sources and routes of spread of nosocomial infections
- iv) Hospital acquired infections: Host and risk factors
- v) MRSA and its importance
- vi) Prevention of hospital acquired infections
- vii) Investigation of hospital acquired infections

**13) STANDARD PRECAUTIONS AND OVERVIEW OF LABORATORY DIAGNOSIS OF MICROBIAL INFECTIONS (Three hours)**

**1) RESPIRATORY TRACT INFECTIONS ( Three hours)**

- i) Bacterial pneumonia **(One hour)**
  - (a) Agents associated
  - (b) Pathogenesis
  - (c) Lab diagnosis
  - (d) Prevention
- ii) Viral pneumonia **(One hour)**
  - (a) List the agents associated
- iii) Influenza
  - (a) Etiopathogenesis
  - (b) Lab diagnosis
  - (c) Prevention
- iv) Tuberculosis **(One hour)**
  - (a) Etiology
  - (b) Pathogenesis
  - (c) Lab diagnosis
  - (d) Prevention –BCG

**2) CNS INFECTIONS (Three hours)**

- i) Acute bacterial meningitis **(one hour)**
  - (a) Agents associated
  - (b) Pathogenesis
  - (c) Laboratory diagnosis
  - (d) Prevention
- ii) Poliomyelitis **(one hour)**
  - (a) Etiology
  - (b) Pathogenesis
  - (c) Prevention
- iii) Tetanus **(One hour)**
  - (a) Etiology
  - (b) Pathogenesis
  - (c) Lab diagnosis
  - (d) Prevention

**3) SKIN & MUSCLE INFECTIONS (Three hours)**

- i) Staphylococcal skin infections **(One hour)**
  - (a) Pathogenesis
  - (b) Lab diagnosis
- ii) Streptococcal skin infections **(One hour)**
  - (a) Pathogenesis
  - (b) Lab diagnosis
- iii) Clostridial myonecrosis **(One hour)**
  - (a) Pathogenesis
  - (b) Lab diagnosis

<b>TOPICS FOR THIRD INTERNAL ASSESSMENT EXAMINATION</b>
---------------------------------------------------------

**1. CARDIOVASCULAR SYSTEM INFECTIONS (Two hours)**

- i. Infective endocarditis and Acute Rheumatic Fever (ARF)
  - a. Etiology
  - b. Pathogenesis
  - c. Lab diagnosis
  - d. Prevention of ARF
- ii. Pyrexia of Unknown Origin (PUO)
  - a. Definition
  - b. Classification
  - c. Investigation of classical PUO

**2. GIT INFECTIONS (Six hours)**

- i. Enumerate the agents causing food poisoning and food associated infections
- ii. E coli diarrhea and Cholera
  - a. Pathogenesis
  - b. Lab diagnosis
- iii. Bacillary dysentery and Enteric fever
  - a. Pathogenesis
  - b. Lab diagnosis
  - c. Prevention of enteric fever
- iv. Entamoeba histolytica, Ascaris lumbricoides and Ancylostoma duodenale
  - a. Morphology
  - b. Transmission,
  - c. Clinical features
  - d. Laboratory diagnosis
- v. Viral hepatitis
  - a. Agents associated
  - b. Transmission
  - c. Pathogenesis, lab diagnosis and prevention of HBV infection

**3. UROGENITAL INFECTIONS (Two hours)**

- i. **URINARY TRACT INFECTIONS**
  - a. Etiology,
  - b. List predisposing factors – Host factors and Microbial factors
  - c. Clinical features
  - d. Laboratory diagnosis
- ii. **SEXUALLY TRANSMITTED DISEASES**
  - a. List organisms causing STDs
  - b. Human immunodeficiency virus infections
    1. General properties
    2. Pathogenesis
    3. Clinical features
    4. Complications
    5. Laboratory diagnosis

**REVISION: 2 hours**

**References:**

1. Textbook of Microbiology for Dental students, Prof: C.P. Baweja
2. Medical Parasitology, D. R. Arora and D. Arora